Assignment3(Q.611.16.3.13)
NCERT EXAMPLER
Probability And Random Processes

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I. Q.11.16.3.13

A bag contains 8 red and 5 white balls. Three balls are drawn at random. Find the Probability that
(a) All the three balls are white
(b) All the three balls are red
(c) One ball is red and two balls are white

Solution:

Let X be the first ball drawn.
Let Y be the second ball drawn.
Let Z be the third ball drawn

We know that there are 8 red balls and 5 white balls in the bag. Therefore,
P(W) = 5/13
P(R) = 8/13

(a) Probability that all three balls are white:
P(X =W, Y =W, Z = W) = (5/13) * (4/12) * (3/11)
= 5/143 0.034965

(b) Probability that all three balls are red:
P(X = R, Y = R, Z = R) = (8/13) * (7/12) * (6/11)
= 28/143 = 0.195804

(c) Probability that one ball is red and two balls are white:
P(X = R, Y = W, Z = W) or P(X = W, Y = R, Z = W) or P(X = W, Y = W, Z=R)
= (8/13) * (5/12) * (4/11) + (5/13) * (8/12)*(4/11) + (5/13)*(4/12)*(8/11)
= 40/143 = 0.27972028